

## **Efficacy Review**

**Date:** August 9, 2010

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**Products:** ORTHO® Home Defense™ Indoor & Outdoor Insect Killer

**EPA Reg. #:** 239-2663

**A.I.'s:** Bifenthrin (0.05%)

**Decision #s:** 399047

**DP #s:** 355721

**Submission:** 570, Conditional Registration Follow-up, Data required, RD review

**MRIDs:** Submitted: 47425001

**GLP:** No

### **MRID 47425001**

**Title:** Evaluation of Residual Efficacy of Ortho Home Defense Indoor & Outdoor Insect Killer (EPA Reg. No. 239-2663) Against Multiple Arthropod Pests

*Guideline:* OPPTS 810.3500

**Materials and Methods:** Lab studies were conducted as a condition of registration for residual claims against the following species: Western Harvester Ant, Carpenter Ant, R.I. Fire Ant, Stripe Tail Scorpion, Dune Scorpion. Polypropylene test containers were treated with either the test product or with water for the untreated control. Containers were treated to wetness, but were not soaked. After drying, treated containers were transferred to testing rooms for storage under normal laboratory conditions for a minimal duration of one year. After aging, test arthropods were exposed to treated arenas for 24 hours before being removed to clean containers for mortality assessments at 24, 48, and 96 hours after exposure.

### **Study Summary of the Results:**

1. 94.7% mortality was observed for W. Harvester ant at 24 hours after exposure to a residue aged 539 days.
2. 100% mortality was observed for Carpenter Ants, Red Imported Fire Ants, and both species of scorpions at 24 hours after exposures to residues aged  $\geq$  416 days.

### **Entomologist's Observations/Discussion:**

-Forced exposure of arthropods for 24 is not the best representation of real-world arthropod exposure scenarios. Since the review of the initial data, OPP's Pesticide Efficacy Review Committee has adopted a five minute standard for exposure of arthropods to treated surfaces, prior to removal to clean containers for mortality assessment. The five minute exposure is a more realistic simulation of actual pest biology, where crawling arthropods, especially foraging ants, for example, will cross treated surfaces but may not remain for an extended period of time. On a case-by-case basis, efficacy reviewers will consider data with longer exposures, depending upon the chemical's mode of action (some are more slow acting than pyrethroids, for example), pest biology, and other scientific considerations. However, data with 24 hours of forced exposure is not an acceptable test duration for the listed pests for typical indoor surface treatments like those described on the product label (i.e., not crack and crevice, where exposure could be longer).

-For scorpions, 5 replicates were used for the study, but only one single scorpion was present for each replicate. Exposure of 5 arthropods each for an efficacy assessment is inadequate to support an efficacy claim. At a minimum, 5 scorpions should be used for each replicate, with 4-5 replicates used for both the treatment and control group.

-Because the data do not adequately support the conditional efficacy claims, the claims should either be removed from the label, or should be approved conditionally, with a requirement for a future submission of data with exposures of arthropods to treated surfaces for 5 minutes prior to removal of test subjects to clean containers for mortality assessments. Alternatively, the registrant may submit a protocol for review where they can propose a different duration of exposure for these studies, based upon a scientific rationale describing why these pests would typically be exposed to a treated bifenthrin surface for longer periods of time under typical use conditions.